

Income in manufacturing regions

Manon Langerin

Shrinking employment in manufacturing is a trend observed in OECD (Organisation for Economic Co-operation and Development) countries as a whole (Bernard 2009a). From 2000 to 2007, the sector lost 278,000 jobs in Canada, or one in six, which reduced its share of total employment from 16% to 12%.¹ The decline took place during a period of general economic growth with a vibrant labour market and low unemployment: in 2007, there were employment gains in every sector except manufacturing, and the unemployment rate fell to 6.0%, its lowest level in 33 years. Some sectors, such as natural resources, experienced vigorous growth, even verging on a shortage of workers. During those years, for every job lost in manufacturing, nearly two jobs were created in construction, health care and social assistance (Lin 2008).

The decline of the manufacturing sector can have serious repercussions for the economic health of some regions, particularly when jobs with manufacturing firms are an important source of employment at the local level. In those regions, the downsizing or closure of a single company can have a snowball effect, affecting not only the company's employees but also business activity and employment among its suppliers. The decrease in employment earnings of workers who are laid off or affected by cuts in work hours can lead to lower household spending and reduced profitability for local retail stores and service firms. The indirect layoffs that result from this process increase the number of unemployed workers, which puts downward pressure on the wages offered by local employers in every sector. Ultimately, the combined effects may impede the local job creation process and thereby weaken the economy of the affected regions.²

Manon Langerin is with the Income Statistics Division. She can be reached at 613-951-3142 or perspectives@statcan.gc.ca.

Economic and employment trends in the manufacturing sector are fairly well documented. Much less so, however, is the impact that those trends have on personal income, depending on the sector's regional importance. Taking advantage of the high level of regional detail in the Longitudinal Administrative Database (LAD) (see *Data source and definitions*), this article examines median income, low-income incidence and use of Employment Insurance (EI) in the various regions, which are ranked by the level of concentration in manufacturing employment. These indicators are compared at two points in time: the most recent peak in manufacturing employment (2000) and the last full year of economic growth (2007). The probability of income loss between those two years for persons living in the same region in 2000 and 2007 is then studied. The estimated probabilities are based on the degree of regional concentration of manufacturing employment and whether these individuals were working in manufacturing in 2000.

Since the economic environment is fundamentally different between major centres and smaller cities (especially with regard to low income), the results of the cross-sectional analysis for metropolitan areas with a population of more than 500,000 are presented separately from the results for smaller areas (see *Income and employment in census metropolitan areas with a population of 500,000 or more*).

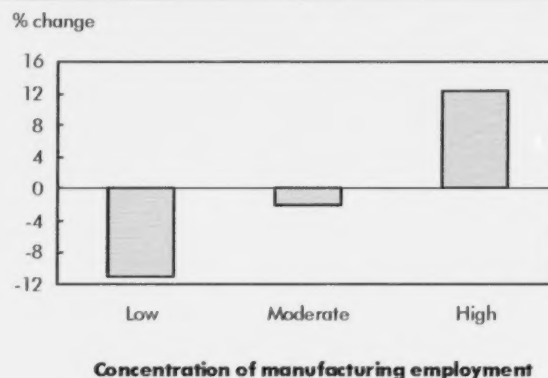
Greater decline in employment in regions with high manufacturing concentration

The loss of a job can result in several unemployment episodes and a loss of employment income (Galarneau and Stratyckuk 2001, Bernard and Galarneau 2010) when workers are forced to take lower-paying jobs. Employment income may start falling even before the job loss, and such decreases often persist much longer

than the duration of unemployment benefits (Morissette et al. 2007). The following sections describe some indicators of the incidence of the decline in manufacturing at the regional level, with census metropolitan areas (CMAs) and census agglomerations (CAs) grouped by level of employment concentration in manufacturing (low, moderate and high) (see *Concentration rate*).

The majority of regions with a high concentration of manufacturing employment are in Quebec (for example, Granby and Thetford Mines) and Ontario (for example, Windsor and Oshawa)—a complete list of CMAs and CAs is provided in the appendix. Those regions have been hardest hit by the slump in manufacturing. From 2000 to 2007, losses of manufacturing jobs totalled 68,600, a 21.9% drop. In comparison, low-concentration regions lost 11,300 manufacturing jobs, a decline of 13.3%.

Chart A Change in number of EI beneficiaries



Note: The concentration of manufacturing employment was kept constant with that calculated in 2000.
Source: Statistics Canada, Longitudinal Administrative Database, 2000 and 2007.

Income and employment in census metropolitan areas with a population of 500,000 or more

From 2000 to 2007, manufacturing employment shrank in every census metropolitan area (Table 1). The leaders were Toronto and Montréal, which together lost 172,800 jobs. Toronto suffered the heaviest loss (95,300 jobs).³ Along with Hamilton, which had the largest proportion of manufacturing

employment, Toronto was one of the few regions that experienced a decline in market income (6.8%). However, because those regions have a very different economic profile than smaller regions, it is difficult to draw any conclusions from these statistics.

Table 1 Change in employment and income in census metropolitan areas with a population of 500,000 or more

| | Share of manufacturing employment % | Number of manufacturing jobs | | | Median market income | | |
|-----------------|-------------------------------------|------------------------------|---------|----------|----------------------|-----------|----------|
| | | 2000 | 2007 | % change | 2000 (\$) | 2007 (\$) | % change |
| Ottawa-Gatineau | 9.1 | 42,530 | 25,300 | -40.5 | 37,800 | 38,500 | 1.9 |
| Québec | 10.8 | 34,440 | 30,325 | -11.9 | 29,500 | 32,300 | 9.5 |
| Edmonton | 11.5 | 48,850 | 45,710 | -6.4 | 31,700 | 37,700 | 18.9 |
| Vancouver | 12.1 | 97,540 | 88,335 | -9.4 | 29,500 | 30,700 | 4.1 |
| Calgary | 12.3 | 54,365 | 47,660 | -12.3 | 33,500 | 38,700 | 15.5 |
| Winnipeg | 16.1 | 48,970 | 42,150 | -13.9 | 29,300 | 31,200 | 6.5 |
| Montréal | 19.6 | 292,945 | 215,420 | -26.5 | 29,100 | 29,000 | -0.3 |
| Toronto | 20.4 | 399,995 | 304,675 | -23.8 | 33,600 | 31,300 | -6.8 |
| Hamilton | 23.3 | 62,645 | 51,220 | -18.2 | 35,200 | 34,200 | -2.8 |

Note: The concentration of manufacturing employment was kept constant with that calculated in 2000.
Source: Statistics Canada, Longitudinal Administrative Database, 2000 and 2007.

More people on Employment Insurance

Manufacturing layoffs had a significant impact on the number of EI beneficiaries, and that impact varied considerably with the regional rate of employment

concentration in the sector. In regions with a high concentration of manufacturing employment, job losses resulted in an increase of 12.4% in the number of people on EI, from 173,600 in 2000 to 195,000 in 2007 (Chart A).

Data source and definitions

The **Longitudinal Administrative Database (LAD)** is a longitudinal and cross-sectional sample composed of 20% of Canadian tax filers. The data are drawn from the T1 income tax returns of individuals. The large number of observations in LAD makes it possible to produce reliable estimates, not only for all of Canada and the provinces, but also for census metropolitan areas (CMAs) and census agglomerations (CAs). LAD also provides a wide range of income sources, which facilitates the study of changes in income and its composition over time. The industry sector variable, based on the North American Industry Classification System, is produced by matching LAD with the Business Register.

This article has a cross-sectional part and a longitudinal part. The target population is somewhat different depending on whether the analysis is cross-sectional or longitudinal. For the cross-sectional analysis, the 2000 and 2007 samples are independent and include persons age 20 to 64 living in a CMA or CA. Non-CMA and non-CA residents are excluded. The longitudinal sample includes all persons age 20 to 57 in 2000 (27 to 64 in 2007) living in the same CMA or CA in 2007 and 2000. The age restrictions for the longitudinal sample were established to avoid having to take variations due to retirement into account, without excluding variations due to unplanned and early retirement that may be the result of a decline in a company's business activity. The longitudinal population makes up 90% of the 2000 population. For both analyses, the 2000 boundaries are used for CMAs and CAs. For 2007, the 2000 boundaries were recreated using postal codes available in LAD. For more information on the advantages of keeping area boundaries constant over time, see Heisz et al. (2005).

All amounts are in 2007 constant dollars.

Employment income is the sum of all employment income reported on T4 slips. It includes salaries, wages and commissions before deductions and excludes self-employment income.

Market income includes the following components:

- employment income (reported on T4 slips)
- other employment income
- net self-employment income
- exemption of Indian employment income
- income from other pensions and retirement pensions
- dividends
- interest and other investment income
- net partnership income

- net rental income
- support payments
- registered retirement savings plan income of persons age 65 and over
- other income

Total income includes all market income components plus the following:

- Old Age Security pension
- Canada Pension Plan and Quebec Pension Plan benefits
- family benefits
- Employment Insurance benefits
- Universal Child Care Benefit
- non-taxable income
- refundable provincial tax credits
- child tax credits
- Canada Child Tax Benefit
- goods and services tax (GST) and Québec sales tax (QST) credits

Total income after tax is total income minus provincial and federal income tax, plus the Quebec abatement.

The **low-income indicator** identifies low-income persons according to the Low Income Measure (LIM). LIM represents one-half of median family income after tax, adjusted for family size.

The analysis covers only two periods and cannot capture all labour and income dynamics between the two periods. A more detailed study of the dynamics between personal income and labour market activity is needed to better understand how wealth creation mechanisms were affected in regions with a high concentration of manufacturing employment. Moreover, since the study focuses largely on people who lived in the same place during the observation period, it does not take labour mobility into account. It thus excludes people who moved to improve their employment conditions. Consider the case of Alberta, for example. The province benefited substantially from declining employment in manufacturing in other regions and served as a major source of re-employment, notably in construction, for less skilled manufacturing workers. It is also important to note that LAD contains relatively little information on the demographic characteristics of the persons included in the database. For example, it has no information on level of schooling, an essential variable for studying employment income and workers' ability to find new jobs.

In contrast, regions with a low concentration of manufacturing employment saw a decrease of 22,500 beneficiaries, or 11.0%, over the same period. These statistics suggest that job security deteriorated in regions of high manufacturing concentration, leaving workers at greater risk of unemployment episodes and hence more likely to be on EI.

Sharp decline in income in regions with high manufacturing concentration

A high level of employment concentration in manufacturing also appears to be associated with larger income losses.⁴ In high-concentration regions, employment income fell by 2.4%, compared with low-concentration regions, where it rose by 10.5% (Chart B). The pattern is similar for market income, which indicates that the decrease in employment income was not offset by increases in other components of market income (see *Data source and definitions*). This finding suggests that the decline in employment income is not due to a rise in retirement in those regions, mainly because the decline in employment income would have been partially offset by an increase in pension income for those persons. The decrease in market income would

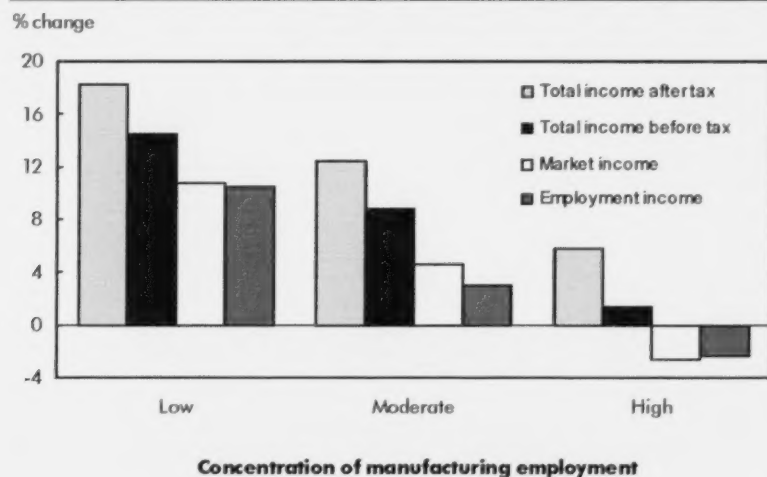
have been smaller than the decline in employment income, however, the data show the opposite.⁵ Government transfers and the tax system had a stabilizing effect in those regions, since total income before tax and total income after tax rose during the period.

The variations changed the regions' comparative income ranking. In 2000, regions with high manufacturing concentration had the highest median income (all types of income), while in 2007 the reverse was true, as those regions had the lowest incomes.

Moreover, residents of high-concentration regions who were in the lowest income quartile (1st quartile) experienced relatively large losses—a 4.8% drop in their market income, compared with a 16.8% increase for their counterparts in low-concentration regions (Chart C). The median income in the lowest income quartile was higher in low-concentration regions (\$7,200) than in high-concentration regions (\$6,100), whereas the opposite was true in 2000.

These trends have widened income disparity in high-concentration regions and reduced it in low-concentration regions. Income decreases in the two lower quartiles in high-concentration regions were accompanied by an increase in the number of low-income people—from 2000 to 2007, the number of low-income people rose 5.6% in those regions, compared with a drop of 15.5% in low-concentration regions (Chart D).

Chart B Change in median total¹ market and employment incomes



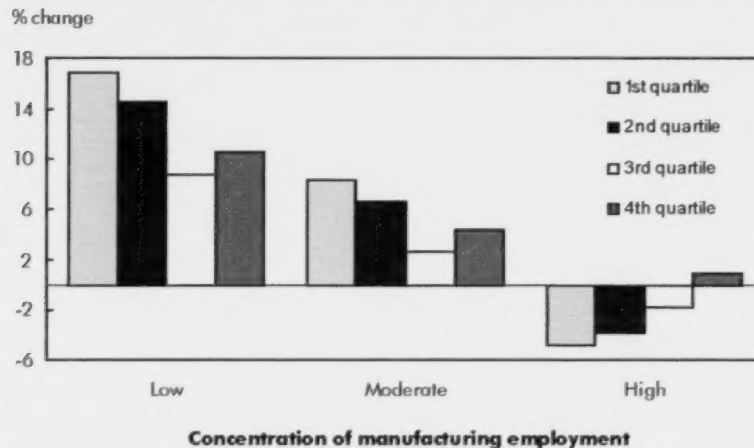
1. Before and after tax.

Note: The concentration of manufacturing employment was kept constant with that calculated in 2000.

Source: Statistics Canada, Longitudinal Administrative Database, 2000 and 2007.

More frequent income declines in small, high-concentration regions

The following sections concern workers who were living in the same CMA or CA in 2000 and 2007. The data are from an ordered logistic regression model. The model isolates the effects of manufacturing concentration on income changes, for various levels of income loss, depending on whether the worker was employed in the manufacturing sector.⁶ More specifically, it estimates the probability of experiencing various levels of total income loss,⁷ by relative concentration of local employment in the manufacturing sector, for the

Chart C Change in median income, by market income quartile

Note: The concentration of manufacturing employment was kept constant with that calculated in 2000. For a given quartile, the income change is equal to the difference between the median income of persons in this quartile based on the 2007 income distribution, and the median income of persons in the same quartile based on the 2000 income distribution.

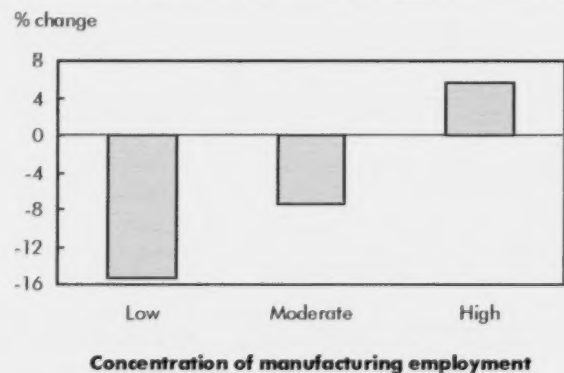
Source: Statistics Canada, Longitudinal Administrative Database, 2000 and 2007.

People in high-concentration regions were more likely to experience relatively large income losses (20% or more of their initial income), the probability of experiencing such a loss was between 18.4% and 29.9% higher than in low-concentration regions, depending on region size. They were also less likely to experience an income gain or no income loss during the period—the probability was between 4.1% and 6.0% lower than in low-concentration regions.

Region size mattered as well, since residents of small cities were more likely to experience income loss than residents of large urban centres. Residents of small regions (population 30,000 or less) with high manufacturing concentration were between 20.8% and 29.9% more likely to experience income loss than those in low-concentration regions of comparable size.

entire population, for manufacturing workers and for workers in other sectors. The same model was also used to estimate the probability that workers would receive EI benefits a specific number of times during the period. The results are all presented in the form of differences in predicted probabilities relative to the reference group, to determine how likely individuals are to experience one of the events in question: income loss, receiving EI or low-income status (see *Models*).

The probability that a person will experience a decline in total income⁸ is significantly associated with the concentration of local employment in manufacturing (Table 2). In fact, the higher the concentration of employment in manufacturing, the greater the probability of experiencing a decline in total income. The probability was between 12.6% and 18.4% higher than in low-concentration regions (for all region sizes combined). In moderate-concentration regions, the probability was between 7.1% and 10.1% higher.⁹

Chart D Change in number of persons with low income after tax

Note: The concentration of manufacturing employment was kept constant with that calculated in 2000.

Source: Statistics Canada, Longitudinal Administrative Database, 2000 and 2007.

Manufacturing workers lost more income in regions with high manufacturing concentration

Workers employed in manufacturing were at greater risk of experiencing a decrease in income if they were employed in regions with high manufacturing concentration. That was the case regardless of region size or magnitude of loss. Overall, they were between 9.4% and 16.3% more likely to experience income loss than workers in a comparable job in a low-concentration region, and 5.0% less likely to experience a gain or no loss in income (Table 2). In addition, manufacturing workers were at greater risk of experiencing relatively high income losses, regardless of region size, but to a greater extent if they were employed outside a large urban centre. In such cases, the effect ranged between 19.6% for regions with a population

of 30,000 or less and 36.0% for regions with a population of 500,000 or less.

Income also decreases for workers in other sectors

Although the decline in manufacturing had a greater impact on the incomes of manufacturing workers, it also affected the incomes of workers in other sectors. The latter also had a significantly higher risk of experiencing income loss if they were employed in a region with high manufacturing concentration. That was the case for all levels of income loss and all sizes of region of residence. However, the effect was more pronounced outside large urban centres (population of 500,000 or less). For income losses of 20% or more of initial income, the effect ranged between 15.0% and 23.3%, compared with 10.5% for all regions, including large centres. This finding indicates that the decline in manufacturing employment seems to have had a greater impact on smaller regions, where labour demand is less diversified.

Risk of income loss higher among younger workers

For all sectors and concentration levels combined, persons age 40 and over in 2000—especially those from 50 to 57—had a significantly higher risk of experiencing income loss during the study period. The latter group was, on average, nearly 1.5 times more likely to experience income loss than those age 20 to 29 (Table 3). This may be attributable to the higher propensity of persons in the older age group to go into semi-retirement or retirement.

On the other hand, the most affected groups differ when degree of concentration and sector are

Table 2 Marginal effect on probability of loss in total income, by region size and concentration of manufacturing employment

| | All regions combined | Census metropolitan areas and census agglomerations | | Census agglomerations | |
|---------------------------------|-------------------------|--|--------------------|--------------------------|-------------------|
| | | 1 million or less | 500,000 or less | 100,000 or less | 30,000 or less |
| % | | | | | |
| Overall population | | | | | |
| Moderate concentration | | | | | |
| Gain or no loss | -2,3 | -1,6 | -2,0 | -1,6 | -2,7 |
| 10% or less | 7,1 | 5,0 | 6,7 | 5,4 | 9,7 |
| Between 10% and 20% | 8,3 | 5,8 | 7,8 | 6,2 | 11,3 |
| 20% or more | 10,1 | 7,0 | 9,3 | 7,4 | 13,4 |
| High concentration | | | | | |
| Gain or no loss | -4,1 | -4,2 | -5,3 | -5,4 | -6,0 |
| 10% or less | 12,6 | 13,2 | 17,3 | 17,4 | 20,8 |
| Between 10% and 20% | 14,8 | 15,5 | 20,4 | 20,6 | 24,7 |
| 20% or more | 18,4 | 19,1 | 25,0 | 25,4 | 29,9 |
| Manufacturing workers | | | | | |
| High concentration | | | | | |
| Gain or no loss | -5,0 | -5,1 | -9,1 | -6,7 | -5,2 |
| 10% or less | 9,4 | 10,7 | 21,4 | 14,0 | 12,1 |
| Between 10% and 20% | 12,3 | 13,8 | 27,8 | 18,3 | 15,6 |
| 20% or more | 16,3 | 17,8 | 36,0 | 23,8 | 19,6 |
| Workers in other sectors | | | | | |
| High concentration | | | | | |
| Gain or no loss | -2,3 | -2,5 | -3,2 | -3,4 | -4,4 |
| 10% or less | 7,5 | 7,9 | 10,7 | 11,5 | 16,8 |
| Between 10% and 20% | 8,6 | 9,2 | 12,4 | 13,4 | 19,5 |
| 20% or more | 10,5 | 11,1 | 15,0 | 16,2 | 23,3 |

Note: All data represent a significant difference from the reference group (persons age 20 to 29 in Quebec, living as a couple, with or without children, in a region with a low concentration of manufacturing employment) at the 0.05 level. The concentration of manufacturing employment was kept constant with that calculated in 2000.

Source: Statistics Canada, Longitudinal Administrative Database, 2000 to 2007.

Table 3 Marginal effect on probability of loss in total income, by age group in 2000 and size of area of residence

| | All regions combined | Census metropolitan areas and census agglomerations | | Census agglomerations | |
|---------------------------|-------------------------|--|--------------------|--------------------------|-------------------|
| | | 1 million or less | 500,000 or less | 100,000 or less | 30,000 or less |
| Overall population | | | | | |
| 30 to 39 | 46.4 | 43.6 | 45.3 | 44.1 | 47.2 |
| 40 to 49 | 82.7 | 79.6 | 84.6 | 82.7 | 92.7 |
| 50 to 57 | 141.6 | 144.7 | 149.9 | 144.8 | 162.0 |

Note: All data represent a significant difference from the reference group (persons age 20 to 29) at the 0.05 level. The concentration of manufacturing employment was kept constant with that calculated in 2000.

Source: Statistics Canada, Longitudinal Administrative Database, 2000 to 2007.

controlled for. For example, among manufacturing workers in high-concentration regions, younger people were hardest-hit by the decline in manufacturing employment (Table 4). Workers age 20 to 29 were more likely to experience income loss (between 29.1% and 102.7%) than their same-age counterparts in low-concentration regions. However, they were also more likely to experience a loss of income when they lived in a smaller region. This suggests that younger workers were the first to be affected by the decline in manufacturing employment, probably because they had less job tenure.

Models

The estimates were generated by an ordered logistic regression model. The model's specifications are as follows:

$$Prob(y_i = m_j) = \alpha + \beta_1 Z_i + \beta_2 C_i + \epsilon_i$$

The **dependent variable** (y) is **total income loss** as a percentage of initial income for the analysis of income change, and **number of years** of receipt when the probability of being on EI is analyzed. In each case, the dependent variable is an ordered categorical variable—since the events (m_j) can be arranged in order of size—and requires the use of an ordered model.

The **events** considered in the analysis of income change are the following:

- gain or no loss in total income;
- total income loss less than or equal to 10%;
- total income loss greater than 10% but less than 20%;
- total income loss equal to or greater than 20%.

For the analysis of EI use, the events are the following:

- did not receive EI benefits at any time;
- received EI benefits for a period of one year;
- received EI benefits for a period of two consecutive years or not;
- received EI benefits for a period of three consecutive years or not, or for a longer period of time.

The **C term** refers to a vector of dummy variables indicating the level of local manufacturing concentration (as previously defined). The **Z term** contains dummy variables for province of residence, age and family composition.

The **predicted probabilities** were calculated using the ordered logistic regression model. Since the variables indicating the level of manufacturing concentration are

dummy variables, the marginal effect of living in a high-concentration region is equal to the difference in predicted probability between this group and the reference group, when the other independent variables are held constant. The reference group is composed of persons age 20 to 29 in 2000 (27 to 36 in 2007) living as a couple, with or without children, in a region with a low concentration of manufacturing employment in Quebec.

To control for the effect of the size of census metropolitan areas (CMAs) and census agglomerations (CAs), separate models were estimated for various subsamples based on population size:

- all CMAs and CAs;
- CMAs and CAs with a population of 1 million or less;
- all CMAs and CAs with a population of 500,000 or less;
- CAs with a population of 100,000 or less;
- CAs with a population of 30,000 or less.

Separate models were also estimated for manufacturing workers and workers in other sectors.

The **data in Tables 3 and 4** are from a simple logistic regression model. In the model, the dependent variable has a value of 1 if there is a loss in total income between 2000 and 2007, and 0 otherwise. The explanatory variables and the model's specifications are identical to those used in the ordered model.

The **data in Tables 5 and 7** are also from a simple logistic regression model. In this case, however, the dependent variable has a value of 1 if the person receives EI benefits or is in a low-income situation (depending on the situation studied), and 0 otherwise.

Table 4 Marginal effect on probability of loss in total income, by age group in 2000, size of area of residence, and concentration of manufacturing employment

| | | Census metropolitan areas and census agglomerations | | Census agglomerations | |
|---------------------------------|----------------------|---|-----------------|-----------------------|----------------|
| | All regions combined | 1 million or less | 500,000 or less | 100,000 or less | 30,000 or less |
| | | | | | |
| % | | | | | |
| Manufacturing workers | | | | | |
| High concentration | | | | | |
| 20 to 29 | 29.1 | 31.7 | 60.4 | 50.0 | 102.7 |
| 30 to 39 | 13.5 | 14.2 | 30.3 | 23.6 | 27.9 |
| 40 to 49 | 8.1 | 10.0 | 17.9 | 11.7 | n.s. |
| 50 to 57 | 9.5 | 8.5 | 11.1 | 5.6 | n.s. |
| | | | | | |
| Workers in other sectors | | | | | |
| High concentration | | | | | |
| 20 to 29 | 19.5 | 20.6 | 23.1 | 19.3 | 14.5 |
| 30 to 39 | 11.1 | 13.1 | 17.6 | 16.3 | 22.0 |
| 40 to 49 | 7.5 | 8.1 | 10.0 | 12.2 | 19.9 |
| 50 to 57 | n.s. | n.s. | 2.8 | 5.3 | 10.8 |

Note: n.s. is a not significant difference relative to the reference group (persons age 20 to 29 in Quebec, living as a couple, with or without children, in a region with a low concentration of manufacturing employment) at the 0.05 level. The concentration of manufacturing employment was kept constant with that calculated in 2000.

Source: Statistics Canada, Longitudinal Administrative Database, 2000 to 2007.

The same was also true, though to a lesser degree, for younger workers in other sectors, who were generally more likely to experience income loss if they were employed in a large urban centre than in a small city. The opposite effect was observed for older workers, who were more likely to experience income loss if they had a job in a small city.

Greater receipt of EI benefits in high-concentration regions

Overall, workers employed in a region with high manufacturing concentration were significantly more likely to receive EI benefits, irrespective of whether they were employed in manufacturing. How-

ever, workers employed in manufacturing had a higher probability of EI use (Table 5).¹⁰ This is consistent with the findings of a previous study (Bernard 2009b), namely that job security dropped significantly for manufacturing workers, and, as a result, the difference in the duration of unemployment spells between manufacturing workers and workers in other sectors has never been so large. In other words, the job stability of manufacturing workers appears to have declined faster in regions with high manufacturing concentration, which can affect the job stability of workers in other sectors.

The risk of receiving EI for a (consecutive or not consecutive) period of one year, two years or three years or more between 2000 and 2007 (see *Models*) was also calculated. Overall, the findings show that living in a region with high manufacturing concentration

Table 5 Marginal effect on probability of being on Employment Insurance in 2007, by size of area of residence and concentration of manufacturing employment

| | All regions combined | Census metropolitan areas and census agglomerations | | Census agglomerations | |
|---------------------------|-------------------------|--|--------------------|--------------------------|-------------------|
| | | 1 million or less | 500,000 or less | 100,000 or less | 30,000 or less |
| | | | | | |
| | | % | | | |
| High concentration | | | | | |
| Manufacturing workers | 39.1 | 36.3 | 21.9 | 10.6 | n.s. |
| Workers in other sectors | 17.6 | 16.4 | 5.6 | 4.6 | 26.0 |

Note: n.s. is a not significant difference relative to the reference group (persons age 20 to 29 in Quebec, living as a couple, with or without children, in a region with a low concentration of manufacturing employment) at the 0.05 level. The concentration of manufacturing employment was kept constant with that calculated in 2000.

Source: Statistics Canada, Longitudinal Administrative Database, 2000 to 2007.

Table 6 Marginal effect on probability of being on Employment Insurance between 2000 and 2007, by size of area of residence and concentration of manufacturing employment

| | All regions combined | Census metropolitan areas and census agglomerations | | Census agglomerations | |
|---------------------------------|----------------------|---|-----------------|-----------------------|----------------|
| | | 1 million or less | 500,000 or less | 100,000 or less | 30,000 or less |
| Manufacturing workers | | | | | |
| High concentration | | | % | | |
| 0 | -12.9 | -13.1 | 9.0 | n.s. | n.s. |
| 1 year | -4.4 | -5.3 | -3.8 | n.s. | n.s. |
| 2 years | 1.7 | 0.2 | -0.4 | n.s. | n.s. |
| 3 years or more | 13.8 | 12.6 | 7.8 | n.s. | n.s. |
| Workers in other sectors | | | | | |
| High concentration | | | | | |
| 0 | -10.5 | -10.3 | -1.9 | -2.1 | -17.6 |
| 1 year | -1.9 | -2.9 | -0.7 | -0.8 | -7.2 |
| 2 years | 3.3 | 1.8 | n.s. | n.s. | -0.9 |
| 3 years or more | 13.0 | 11.2 | 1.7 | 1.8 | 16.9 |

Note: n.s. is a not significant difference relative to the reference group (persons age 20 to 29 in Quebec, living as a couple, with or without children, in a region with a low concentration of manufacturing employment) at the 0.05 level.

Source: Statistics Canada, Longitudinal Administrative Database, 2000 to 2007.

ers living in high-concentration regions with a population of 100,000 or less were not significantly more likely to receive EI than their counterparts in low-concentration regions (Table 6). In contrast, the effect on workers in other sectors tended to increase as region size decreased, rising from 13.0% for all CMAs and CAs to 16.9% for CAs with a population of 30,000 or less. In other words, manufacturing workers were more likely to receive EI if they were employed in a large urban centre, while workers in other sectors had a higher risk if their jobs were outside the major urban centres.

Increased low-income incidence in regions of high manufacturing concentration

Between 2000 and 2007, low-income incidence increased in regions with a high concentration

significantly increased the risk of receiving EI on several occasions (three years or more) during this period. It also lowered the probability of never filing an EI claim. That was true for both manufacturing workers and other workers.

Manufacturing workers in these regions were from 7.8% to 13.8% more likely to receive EI for a period of three years or more than their counterparts in low-concentration regions. For workers in other sectors, the difference was between 1.7% and 16.9% (Table 6).

The higher risk of receiving EI on several occasions in high-concentration regions disappears, however, with decreasing region size. In other words, manufacturing work-

Table 7 Marginal effect on probability of being in low income

| | All regions combined | Census metropolitan areas and census agglomerations | | Census agglomerations | |
|---------------------------|----------------------|---|-----------------|-----------------------|----------------|
| | | 1 million or less | 500,000 or less | 100,000 or less | 30,000 or less |
| High concentration | | | | | |
| Combined population | | | % | | |
| 2000 | -7.3 | -1.8 | -5.6 | -5.6 | n.s. |
| 2007 | 10.5 | 16.1 | 11.8 | 16.6 | 34.9 |
| Manufacturing workers | | | | | |
| 2000 | -30.2 | -17.2 | -18.5 | -16.6 | n.s. |
| 2007 | n.s. | 17.4 | 18.8 | 33.5 | n.s. |
| Workers in other sectors | | | | | |
| 2000 | 4.4 | 6.3 | n.s. | n.s. | n.s. |
| 2007 | 21.1 | 25.6 | 24.6 | 28.1 | 41.6 |

Note: n.s. is a not significant difference relative to the reference group (persons age 20 to 29 in Quebec, living as a couple, with or without children, in a region with a low concentration of manufacturing employment) at the 0.05 level. The concentration of manufacturing employment was kept constant with that calculated in 2000.

Source: Statistics Canada, Longitudinal Administrative Database, 2000 to 2007.

of manufacturing employment (Table 7). The higher incidence affected the overall population as well as manufacturing workers and workers in other sectors. In 2000, manufacturing workers living in high-concentration regions were less likely to be in low income than their counterparts in low-concentration regions, but in 2007, they were more likely.

Workers in other sectors living in high-concentration regions were 4.4% more likely in 2000 to be in low income than their counterparts in low-concentration regions. By 2007, the difference had increased to 21.1%. The incidence was considerably greater as region size decreased: 25.6% for areas with a population of 1 million or less and 41.6% for areas with a population of 30,000 or less. The increase in low-income incidence among those workers supports the idea that the decline in manufacturing employment affected the employment and income of workers in other sectors if manufacturing was an important part of the regional economy. A similar effect among manufacturing workers was observed, but the effect on smaller regions was not significant.

Conclusion

The global slowdown in manufacturing has affected Canada in a number of ways. Plant closures and mass layoffs had an impact not only on employment and working conditions for workers in the manufacturing sector, but also on economic activity and workers in other sectors. The goal of this study was to determine whether job losses in manufacturing were actually accompanied by income

Concentration rate

The **rate of employment concentration** in manufacturing was calculated for each census metropolitan area (CMA) and each census agglomeration (CA) in 2000. It is equal to the relative proportion of local employment in manufacturing, i.e., the number of manufacturing workers divided by the total number of workers. For comparability purposes, and because 2000 was the most recent peak in manufacturing employment, the concentration rate used for the entire observation period is the 2000 rate.

CMAs and CAs with a population of 500,000 or less were divided into three equally sized groups by level of concentration of local employment in manufacturing. The categories are as follows:

- **Low concentration:** 12% or less of employed persons in the CA or CMA work in manufacturing;
- **Moderate concentration:** more than 12% but less than 20% of employed persons in the CA or CMA work in manufacturing;
- **High concentration:** 20% or more of employed persons in the CA or CMA work in manufacturing.

CMAs and CAs with a population of more than 500,000 were excluded because they could skew the results with the size of their populations.

decreases at the regional level, and, if so, whether those losses were associated with the local rate of employment concentration in the manufacturing sector. Its aim was also to determine whether those job losses were behind a widespread slowdown in employment affecting the income of workers with jobs in other sectors.

The overall growth of employment and income in Canada masked changes experienced by some population groups, particularly those living in regions of high manufacturing concentration. These regions suffered the biggest job losses, which led to an increase in the number of workers on EI at the local level. Employment income and market income also declined in these regions, whereas they rose substantially in low-concentration regions. Moreover, the slowdown in manufacturing activ-

ity had a greater effect on those who were least well off, which resulted in an increase in the number of low-income people.

At the individual level, even though manufacturing workers were more affected by recent layoffs, workers in other sectors were significantly more likely to experience income loss if their jobs were in regions with a high concentration of manufacturing employment. They were also more likely to go receive EI benefits, which appears to indicate a decrease in job stability in those regions. The bottom line is that low-income incidence increased significantly for both the population as a whole and workers in all sectors.

These findings confirm the idea that the decline in manufacturing employment had an impact on the entire economy of regions where

manufacturing activity played a key part, thus affecting the employment and income of workers in other sectors. In those regions, job and income losses among manufacturing workers may have disrupted the employment market and local consumption decisions, thereby affecting all mechanisms of regional wealth creation. Apart from those considerations, the results show that not only manufacturing workers, but all types of workers in those regions, may experience income losses when there is a slowdown in the sector.

Perspectives

■ Notes

1. For more details concerning recent trends in manufacturing, see Kowaluk and Larmour (2009).
2. For information on the relationship between manufacturing and services, see François and Woerz (2007).
3. For more information on the dynamics of the manufacturing sector in Toronto, Montréal and Vancouver, see Vinodrai (2001).
4. This applies to total income (before and after tax), market income and employment income.
5. This is further supported by the proportion of people who reported earnings from retirement-related sources, which is quite similar from one concentration category to another in 2000 and 2007. In addition, the distribution of the proportion of those earnings relative to total reported income was, for all intents and purposes, identical for the three categories.
6. The levels of loss considered are as follows: 10% or less loss of total income, between 10% and 20% loss of total income, and 20% or more loss of total income.
7. The model includes variables for province of residence, family composition and age.
8. The same patterns were found in separate analyses for employment income and market income. However, total income is a better indicator of individual standard of living because it captures changes in income composition that may be due to retirement, transition from paid employment to self-employment, or job loss.
9. The comparison here is between total income in 2000 and 2007, in 2007 constant dollars.
10. The data in Table 5 are from a simple logistic regression model on the probability of a person being on EI in 2007 if he or she was not on EI in 2000. The model uses the same specifications as the ordered model.

■ References

- Bernard, André. 2009a. "Trends in manufacturing employment." *Perspectives on Labour and Income*. Vol. 10, no. 2. February. Statistics Canada Catalogue no. 75-001-X. p. 5-13.
<http://www.statcan.gc.ca/pub/75-001-x/2009102/pdf/10788-eng.pdf> (accessed July 14, 2010).
- Bernard, André. 2009b. "Job stability and unemployment duration in manufacturing." *Perspectives on Labour and Income*. Vol. 10, no. 11. November. Statistics Canada Catalogue no. 75-001-X. p. 5-14.
<http://www.statcan.gc.ca/pub/75-001-x/2009111/pdf/11025-eng.pdf> (accessed July 14, 2010).
- Bernard, André and Diane Galarneau. 2010. "Layoffs in Canada." *Perspectives on Labour and Income*. Vol. 11, no. 5. May. Statistics Canada Catalogue no. 75-001-X. p. 5-17.
<http://www.statcan.gc.ca/pub/75-001-x/2010105/pdf/11161-eng.pdf> (accessed July 14, 2010).
- François, Joseph and Julia Woerz. 2007. *Producer Services, Manufacturing Linkages, and Trade*. Tinbergen Institute Discussion Paper '11 2007-045/2. Amsterdam and Rotterdam, The Netherlands. Tinbergen Institute. 45 p.
<http://publishing.eur.nl/ir/repub/asset/10425/2007-0452.pdf> (accessed July 14, 2010).
- Galarneau, Diane and Lori M. Stratychuk. 2001. "After the layoff." *Perspectives on Labour and Income*. Vol. 2, no. 10. October. Statistics Canada Catalogue no. 75-001-X. p. 19-29.
<http://www.statcan.gc.ca/studies-etudes/75-001/archive/e-pdf/5960-eng.pdf> (accessed July 14, 2010).
- Heisz, Andrew, Sébastien LaRochelle-Côté, Michael Bordt and Sudip Das. 2005. *Labour Markets, Business Activity, and Population Growth and Mobility in Canadian CMAs*. Statistics Canada Catalogue no. 89-613-MIE – No. 006. Trends and Conditions in Census Metropolitan Areas series. Ottawa. 94 p.
<http://www.statcan.gc.ca/pub/89-613-m/89-613-m2005006-eng.pdf> (accessed July 14, 2010).
- Kowaluk, Russell and Rob Larmour. 2009. *Manufacturing: The Year 2008 in Review*. Analysis in Brief. Statistics Canada Catalogue no. 89-621-M, no. 77. Ottawa. 25 p.
<http://www.statcan.gc.ca/pub/11-621-m/11-621-m2009077-eng.pdf> (accessed July 14, 2010).
- LIN, Jane. 2008. "Trends in employment and wages, 2002 to 2007." *Perspectives on Labour and Income*. Vol. 9, no. 9. September. Statistics Canada Catalogue no. 75-001-X. p. 5-15.
<http://www.statcan.gc.ca/pub/75-001-x/2008109/pdf/10694-eng.pdf> (accessed July 14, 2010).

Morissette, René, Xuclin Zhang and Marc Frenette. 2007. *Earnings Losses of Displaced Workers: Canadian Evidence from a Large Administrative Database on Firm Closures and Mass Layoffs*. Statistics Canada Catalogue no. 11F0019MIE – No. 291. Analytical Studies Branch Research Paper Series. Ottawa. 38 p.
<http://www.statcan.gc.ca/pub/11f0019m/11f0019m2007291-eng.pdf> (accessed July 14, 2010).

Vinodrai, Tara. 2001. *A Tale of Three Cities: The Dynamics of Manufacturing in Toronto, Montreal and Vancouver, 1976-1997*. Statistics Canada Catalogue no. 11F0019 – No. 177. Analytical Studies Branch Research Paper Series. Ottawa. 82 p.
<http://www.statcan.gc.ca/pub/11f0019m/11f0019m2001177-eng.pdf> (accessed July 14, 2010).

Appendix Ranking of census metropolitan areas and census agglomerations by relative proportion of manufacturing employment

Low concentration of manufacturing employment

| | | |
|--------------------|------------------|----------------|
| St. John's | Corner Brook | Charlottetown |
| Gander | Labrador City | Halifax |
| Cape Breton | Thompson | Grande Prairie |
| Fredericton | Regina | Wood Buffalo |
| Bathurst | Yorkton | Wetaskiwin |
| Rimouski | Moose Jaw | Cranbrook |
| Sept-Îles | Swift Current | Victoria |
| Val-d'Or | North Battleford | Nanaimo |
| Rouyn-Noranda | Prince Albert | Courtenay |
| Kingston | Estevan | Prince George |
| North Bay | Medicine Hat | Dawson Creek |
| Sudbury | Lethbridge | Fort St. John |
| Elliot Lake | Red Deer | Whitehorse |
| Timmins | Camrose | Yellowknife |
| Kenora | Lloydminster | |
| Portage la Prairie | Grand Centre | |

Moderate concentration of manufacturing employment

| | | |
|----------------------|------------------------|----------------|
| Grand Falls-Windsor | Pembroke (Quebec) | Brandon |
| Summerside | Belleville | Saskatoon |
| Kentville | Peterborough | Penticton |
| Truro | Lindsay | Kelowna |
| Moncton | St. Catharines-Niagara | Vernon |
| Saint John | London | Kamloops |
| Campbellton (Quebec) | Sarnia | Chilliwack |
| Matane | Owen Sound | Abbotsford |
| Rivière-du-Loup | Barrie | Duncan |
| Chicoutimi-Jonquière | Orillia | Campbell River |
| Alma | Haileybury | Powell River |
| Trois-Rivières | Sault Ste. Marie | Williams Lake |
| Joliette | Thunder Bay | Terrace |

High concentration of manufacturing employment

| | | |
|----------------|--------------------------|---------------|
| New Glasgow | La Tuque | Hawkesbury |
| Edmundston | Drummondville | Brockville |
| Baie-Comeau | Granby | Cobourg |
| Dolbeau | Saint-Hyacinthe | Port Hope |
| Saint-Georges | Sorel | Oshawa |
| Thetford Mines | Saint-Jean-sur-Richelieu | Kitchener |
| Sherbrooke | Salaberry-de-Valleyfield | Brantford |
| Magog | Lachute | Woodstock |
| Cowansville | Cornwall | Tillsonburg |
| Victoriaville | Windsor | Simcoe |
| Shawinigan | Collingwood | Guelph |
| Stratford | Midland | Quesnel |
| Chatham | Port Alberni | Prince Rupert |
| Leamington | | Kitimat |
| Strathroy | | |